

Patent Application of

Lanny R. Lee

For

PERSONAL FLOTATION DEVICE

ABSTRACT

PERSONAL FLOTATION DEVICE PROTECTIVE
The invention, is an improved PFD is flexible tube shell with caps urged over and preferably sealed onto each end, each cap end having a clasp and preferably worn as a necklace by joining the clasps on each end. The flexible tube shell has a longitudinal groove and *ONE OR MORE* a long distensible

sack with ends each having gas source. Said sack is disposed internally through the length of the

tube. To activate, the PFD is stretched *BY MEANS WITH SUFFICIENT FORCE TO WITHDRAW THE END CAPS* or jacked to pull the end caps off the tube. This releases

THE TRIGGER DEVICE THEREBY CAUSES THE
gas from to fill sack expanding outward causing adequate pressure to cause the flexible tube

TO BE RELEASED FROM THE SACK
shell to be split along the internal groove and is jettisoned. The PFD is a gas filled *MOSTLY TUBULAR SHAPE* and shape,

*THIS PROVIDES
AIR BAG
PROTECTION*

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BACKGROUND

This invention relates to personal flotation devices (PFD), specifically the inflated type of devices that are ^{OR RESIST USUALLY} user operated. It is impractical for participants of many active water sports to wear any type of life jackets even when they are in open water. In many of the physically demanding water sports as surfing, diving, swimming and sailing PFD are not used, usually, because they hamper body movements and interfere with their equipment. Surfing is a popular water sports that ^{NOBODY DROVE EACH YEAR LIKEWISE} thousands of participants have been drowned. Flotation devices ^{IT IS UNLIKELY} ~~often~~ are not practical for use by swimmers and divers. Scuba divers are often lost to drowning because there was no last line of protection. Many PFD provided by manufacturers are worn around the waist either in boxes or in the belt. After inflation most all of these PFD require the wearer to get into openings or buckle straps. When the victim is reached for rescue most PFD interferes with the efforts and must be removed for resuscitation.

The U.S. Pat. NO. 5,823,840 to Powers (1998) is an example of a PFD that the user wears on the wrist and is inflated in place, however, deployment requires that both hands to be momentary occupied. This is time that the wearer is not likely to have and if successfully deployed will be only hold the attached hand at the surface. An example of a PFD that the user wears on the arm is U.S. Pat. NO. 6,056,612 to Markwitz (2000) still more are ones that the user wears in a box on a waistline belt are the U.S. Pat. NO. 5,738,557 to Biesecker (1998), U.S. Pat. NO. 5,820,431 to Biesecker (1998) and also to Bisecker is U.S. Pat. NO. 6,004,177 (1999). A combination waist belt and shoulder PFD is the U.S. Pat. NO. 6,036,562 to Brown (2000) and continued to U.S. Pat. NO. 6,394,866 to Brown (2002), A PFD shown in U.S. Pat. NO. 5,779,512 to Rupert (1998)

provides for concentrically joined rings to be inflated and worn at times for therapeutic swims. A transparent PFD for sun tanning purposes is seen in U.S. Pat. NO. 6,007,395 to Knoll (1999).

SUMMARY

The invention, is an improved PFD is flexible ^{PROTECTIVE} tube shell with caps urged over and preferably sealed onto each end, each cap end having a clasp and preferably worn as a necklace by joining the clasps on each end. The flexible tube shell has an internal longitudinal groove and a distensible sack comprised of ^{ONE OR MORE} ~~two~~ cells, each with a gas source is disposed internally throughout the length of the tube. Each cell is connected internally to a cap. The gas source may be either a chemical gas generator or a compressed gas cartridge.

A PFD is achieved when either the wearer or a rescuer ^{BY MEANS OF A TRIGGER MECHANISM} pulls or yanks any place around the clasped "necklace" with enough force to ^{UNSEAL} ~~pull~~ the end caps off the tube. This releases gas from to fill each cell that expand outward causing adequate pressure to cause the flexible tube shell to be split along the ^{LONGITUDINAL} ~~internal~~ groove and jettisoned.

To improve visibility the sack ideally will be a visible reflective color. Another aspect of the invention is that the PFD could be decorated that would encourage it's use.

Accordingly several objects and advantages of the invention provide a PFD with broader use applications.

DRAWINGS

FIG. 1 is a prospective view of the PFD when relaxed.

FIG. 2 is a prospective view of the PFD in clasped position.

FIG. 3 is a prospective view of the PFD inflated showing tube jettisoned.

FIG. 4 is a section view taken 4-4

FIG. 5 is a section view taken 5-5

DESCRIPTION

FIG. 1 is a view of a PFD 1 in accordance with the invention having a flexible tube shell 2 with tab end cap 3 and opposite end receptacle end cap 6 each ~~sealed~~^{preferably} sealed to the end of flexible tube shell 2. A long 10 sack comprised of cells 4 having two opposite ends each containing gas source 5 ~~is~~^{are} disposed in flexible tube shell 2.

FIG. 2 is a view of the PFD 1 by means bent to permit the tab end cap 2 being coupled to receptacle end cap 6 providing a clasp 16 ~~SEM-TABUYS~~ in encircling ring 8 circumscribing a neck area 30.

FIG. 3 is an orthographic view of the **PFD 1** shown having been caused to inflate when encircling ring **8** is by means stretched causing the tub shell **2** end portion **9** each to be respectively withdrawn from tab end cap **3** and the receptacle end cap **6**. The internal stress created by the inflating cells **4** causes tube shell **2** to split provided along groove **7** and is jettisoned. The invention a PDF (personal flotation device) ^{AND AIR-BAG} is demonstrated when filled cells **4** having a couple clasp **16** is circumscribing a neck area **30** provide buoyancy ^{AND CUSHION.}

FIG. 4 is a section view showing the typical end cap layout and compressed gas trigger device

18. External surface of end portion **9** is closely fitted to the internal surface **23** of end cap **3** and open end portion external surface **21** of cell **4** is joined and sealed to internal surface **21**. The Service loop **20** provides slack so the tube shell **2** end portions **9** can be forcibly withdrawn respectively from tab end cap **3** and receptacle cap **6**. Housing **28** is retained to the gas cartridge **22** and detent dog is biased by inside wall of tube shell **2** to retain pierce plunger and hold spring **30** in compression.

FIG. 5 is a section view showing trigger device **18** and also a section of tube wall **2** into having a longitudinal groove **7**.

FIG. 6 when detent dog **32** is released allowing pierce plunger to be driven by spring **30** into membrane **24** thereby releasing compressed gas ^{From Gas Source 5} to fill cell **4**. This is repeated at the opposite end thereby providing a redundant feature and a PFD **1** according to the invention.



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CLAIMS

- HAVING AN AIR BAG INSIDE*
1. In a personal flotation device, comprising:
- a extendable sack, said sack having two ends is longitudinally disposed in a flexible tubular shell fitted with end caps, said end are secured internal to each cap,
- a gas source having a release device is contained in said end of each of said cells, and
- each end cap has clasp feature and the invention is by manually bent around the neck and said end caps are joined by said clasps, whereby
- personal flotation device achieved means pulling and stretching the invention causing said end caps to be pulled from said flexible tube shell, thereby
- activating said gas source thereby releasing gas from said devices expanding said gas sack to inflate thereby splitting said flexible tube shell along said internal groove causing said flexible tube shell to be jettisoned.

2. ---

3. ---

4. ---

5. ---

6. ---

SHEET 1 OF 2

Fig 1

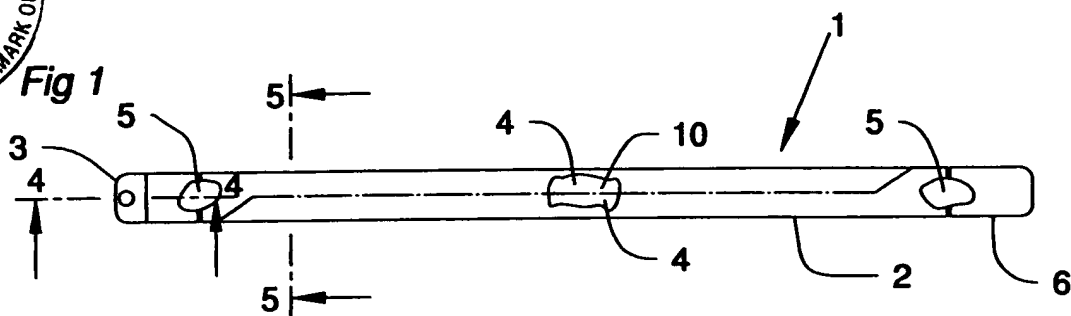


Fig 2

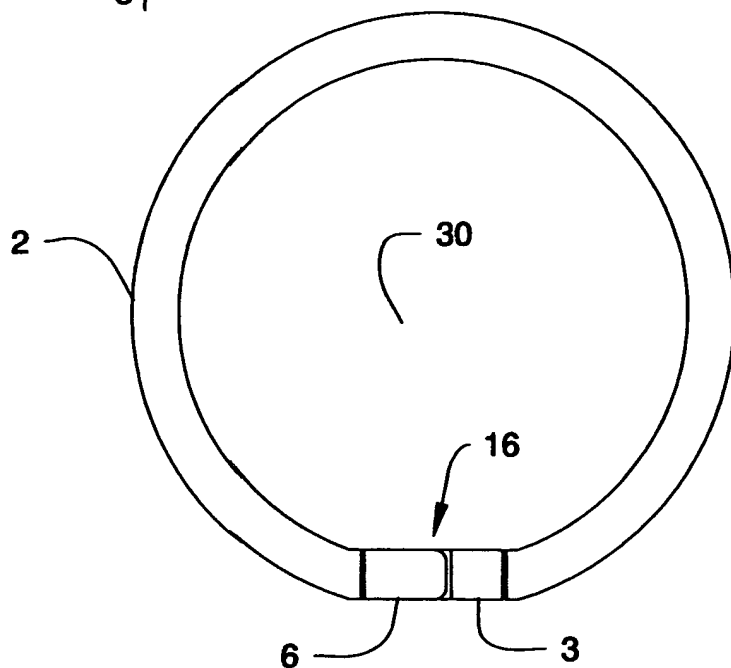
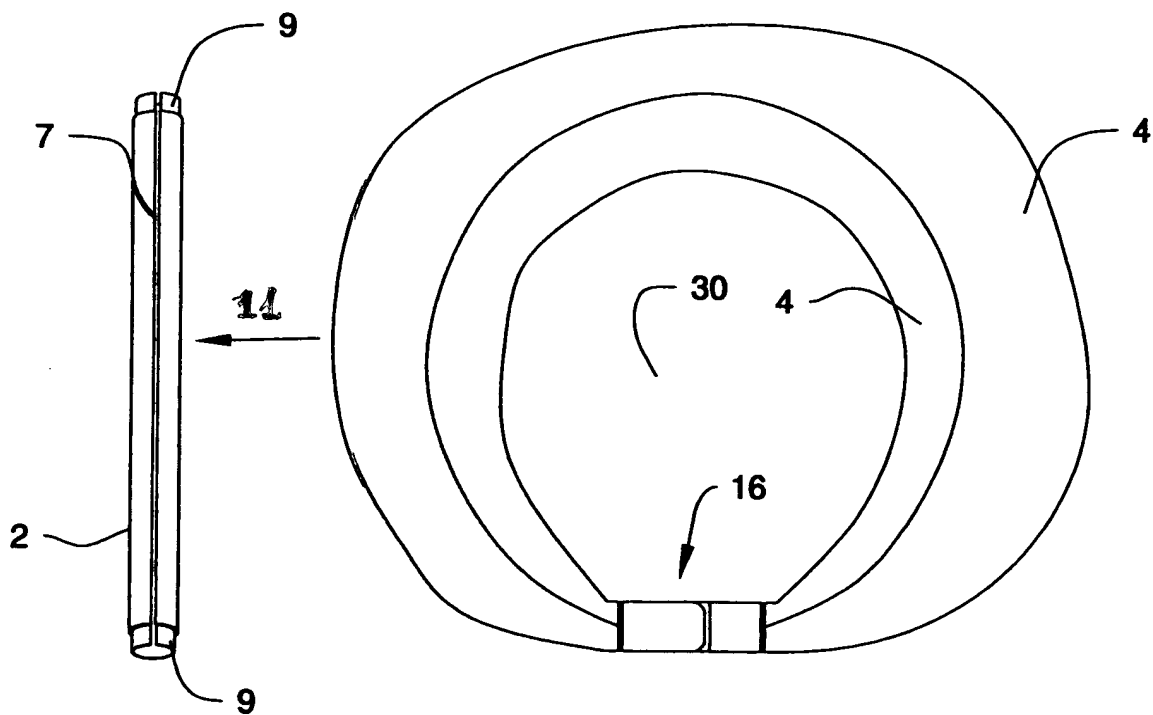


Fig 3



SHEET 2 OF 2

Fig 4

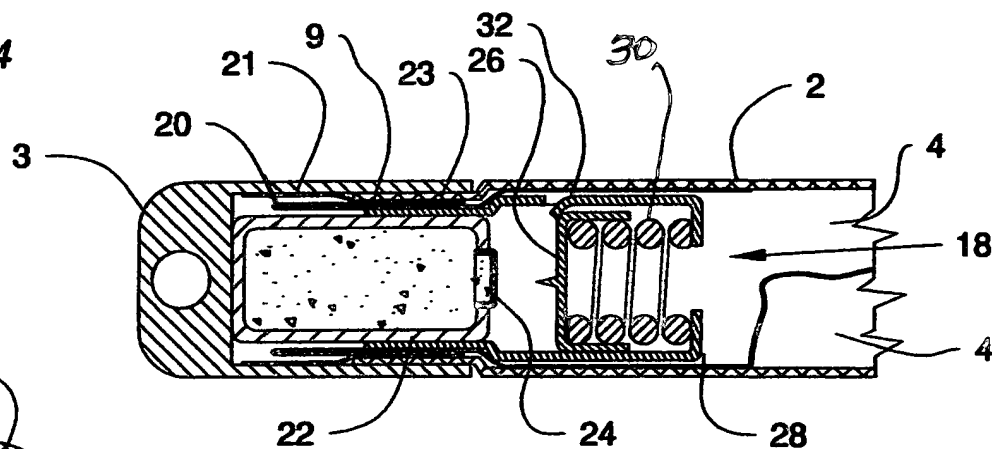


Fig 5

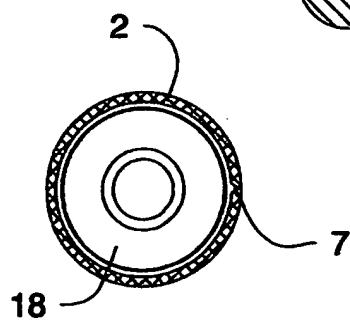


Fig 6

